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INCREMENTAL PROGNOSTIC VALUE OF LEFT VENTRICULAR EJECTION FRACTION RESERVE IN GATED RB-82 POSITRON EMISSION TOMOGRAPHY OVER CLINICAL VARIABLES IN PATIENTS WITH RESTING LEFT VENTRICULAR DYSFUNCTION

Poster Contributions
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Background: Left ventricular ejection fraction (LVEF) reserve measured by stress-rest PET myocardial perfusion imaging (MPI) provides incremental prognostic value in predicting risk of adverse events in a general population of patients (pts) undergoing testing. We sought to assess the incremental value of LVEF reserve for prediction of all cause death (ACD) in pts with systolic LV dysfunction who underwent PET-MPI.

Methods: We performed a retrospective analysis of 542 consecutive pts with systolic dysfunction (rest LVEF<45%) who underwent vasodilator stress-rest gated Rb-82 PET-MPI at the Cleveland Clinic between 2006-2009. Rest and stress LVEF and volumes were calculated using commercially available software (4DM). LVEF reserve was defined as the difference between stress and rest LVEF. Cox proportional hazards modeling (CPH) was used to examine the association between LVEF reserve and ACD after adjusting for potential confounders.

Results: Of 542 pts with PET-MPI, 452 (mean age 66±11y, 82% men) had abnormal resting LVEF (mean EF 27±8) of whom 303 patients had ACD over a mean followup of 971±536 days. In univariate analysis increased risk for ACD was associated with older age, increased BMI, diabetes, aortic stenosis (AS), mitral regurgitation (MR) and low resting and stress LVEF (all p<0.02). Pts who underwent revascularization or ICD post-MPI were at decreased risk for death (p<0.05). CPH modeling revealed that after adjusting for pt characteristics, medications used, PET data (ischemia, scar, LV volumes, LVEF), post-PET treatment, AS, and MR, LVEF reserve provided incremental value in predicting all cause death [Hazard ratio (HR) (95%CI) 0.83 (0.72-0.96) per 5% change in LVEF]. This added value was present both with and without pts with AS and MR.

Conclusion: Improved LVEF reserve during pharmacologic stress is associated with a lower risk of all cause death and provides incremental value in predicting all cause death among patients with LV dysfunction undergoing PET-MPI.